

Additions to the scorpion faunas of Trinidad and Tobago¹

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Additions to the scorpion faunas of Trinidad and Tobago. - In this paper are presented the results of a study of scorpion material collected during the spring of 1997 in Trinidad and Tobago. The collection is composed of 2 families, 4 genera and 7 species. One new species, *Microtityus starri* n. sp. (Buthidae) is described from Little Tobago. It is suggested that *Tityus trinitatis* Pocock may be a polymorphic species. Some comments on the other species are also included.

Key-words: Scorpion - Neotropics - Trinidad & Tobago - New species - *Microtityus starri*.

INTRODUCTION

Early contributions to knowledge of the scorpion fauna of Trinidad and Tobago consisted mainly of isolated descriptions of species from these two islands or citations of species previously described from nearby countries such as Venezuela and the Guianas (KARSCH 1879; POCOCK 1893a, b, 1897). The first publication presenting a synthesis of the species known to be represented in Trinidad and Tobago was the monographic work by MELLO-LEITÃO (1945). This work, however, focuses on the entire South American fauna and does not give any details concerning the scorpions of Trinidad and Tobago.

The first publication dedicated entirely to the scorpions of Trinidad and Tobago was by KJELLESVIG-WAERING (1966). In this, the author not only presented a synopsis of the scorpion faunas of the two islands, but also gave a considered discussion of the biogeographic affinities between the faunas of Trinidad and Tobago and those of the mainland, in particular of Venezuela. In addition, he described an unusual new buthid genus, *Microtityus*, with a new species, *Microtityus rickyi* and a new species of the chactid genus *Broteochoactas*, *B. laui*.

In a more recent publication, FRANCKE & BOOS (1986) gave specific account of the chactid scorpions of Trinidad and Tobago. These authors described a new species

¹ Etude subventionnée par le Département municipal des affaires culturelles de la Ville de Genève.

in the genus *Chactas*, *C. raymondhansi*. This was the first record of this genus in the Islands. In addition, they resurrected the species *Broteochactas nitidus* Pocock, previously thought to be a synonym of *Broteochactas gollmeri* (Karsch), a species only present in Venezuela.

Field work carried out by the junior author in Trinidad & Tobago during the spring of 1997 resulted in the collection of more than 200 scorpions belonging to the genera *Ananteris*, *Microtityus* and *Tityus* (Buthidae) and *Broteochactas* (Chactidae). The *Ananteris* and *Tityus* species were confirmed as being *A. cussinii* Borelli, *T. melanostictus* Pocock, *T. trinitatis* Pocock and *T. discrepans* (Karsch), while the *Broteochactas* was *B. nitidus* Pocock. The specimens of *Microtityus* collected in Trinidad corresponded well with *M. rickyi* Kjellesvig-Waering, but those taken in Little Tobago proved to be a new species. The scorpion fauna of Trinidad et Tobago comprises therefore 2 families, 5 genera and 8 species.

This new species is described in the present paper, and comments are made on the other species.

All specimens are deposited in the collections of the Muséum d'histoire naturelle, Geneva. All but a few have been collected by Dietmar Huber.

SPECIES STUDIED

FAMILY BUTHIDAE

Ananteris cussinii Borelli, 1910

Figs 1 to 9

This species, originally described from Cagua in Venezuela is the only member of the genus *Ananteris* present in Trinidad. It has already been clearly described in the revision of the genus by Lourenço (1982), but seems to be rare in Trinidad. Rarity is also apparent in all other species of this genus.

Material examined: Trinidad, Lady Chancellor Hill-P.O.S., 18/III/1997, 1 male; 6/IV/1997, 2 males; 7/IV/1997, 1 male. St. Benedict- Tunapuna, Mt. Tabor trail, 2/IV/1997, 1 female; 4/IV/1997, 2 males and 1 female.

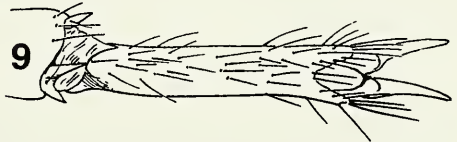
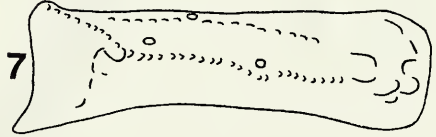
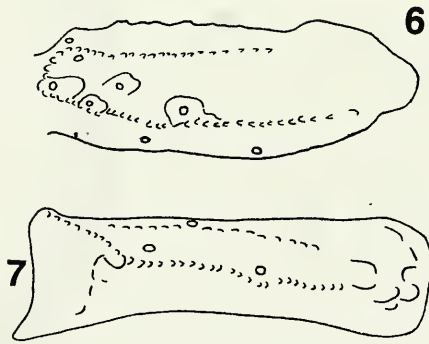
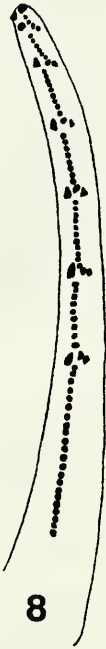
Microtityus rickyi Kjellesvig-Waering, 1966

Fig. 10

The genus *Microtityus* was originally described from Trinidad, with *Microtityus rickyi* Kjellesvig-Waering, 1966 as type species. The type locality indicated was «Crow's Nest» at the south flank of Punta Delgada, on the south of Teteron Bay.

Since the first description of both genus and species in 1966, many other species have been discovered and described from the Caribbean islands and South America. At present 14 species are known from Cuba, Dominican Republic, US Virgin Islands, Brazil, Trinidad and Venezuela, as well as an Oligocene amber fossil from Dominican Republic. *Microtityus rickyi* seems to be common in Trinidad. It has not been reported from Tobago.

FIGS 1 to 9. *Ananteris cussinii*, female. 1 to 7. Trichobothrial pattern. 1 to 3. Chela, external, ventral and internal aspects. 4 and 5. Tibia, dorsal and external aspects. 6 and 7. Femur, dorsal and external aspects. 8. Disposition of the granulation of pedipalp-chela finger. 9. Tarsi, ventral aspect.



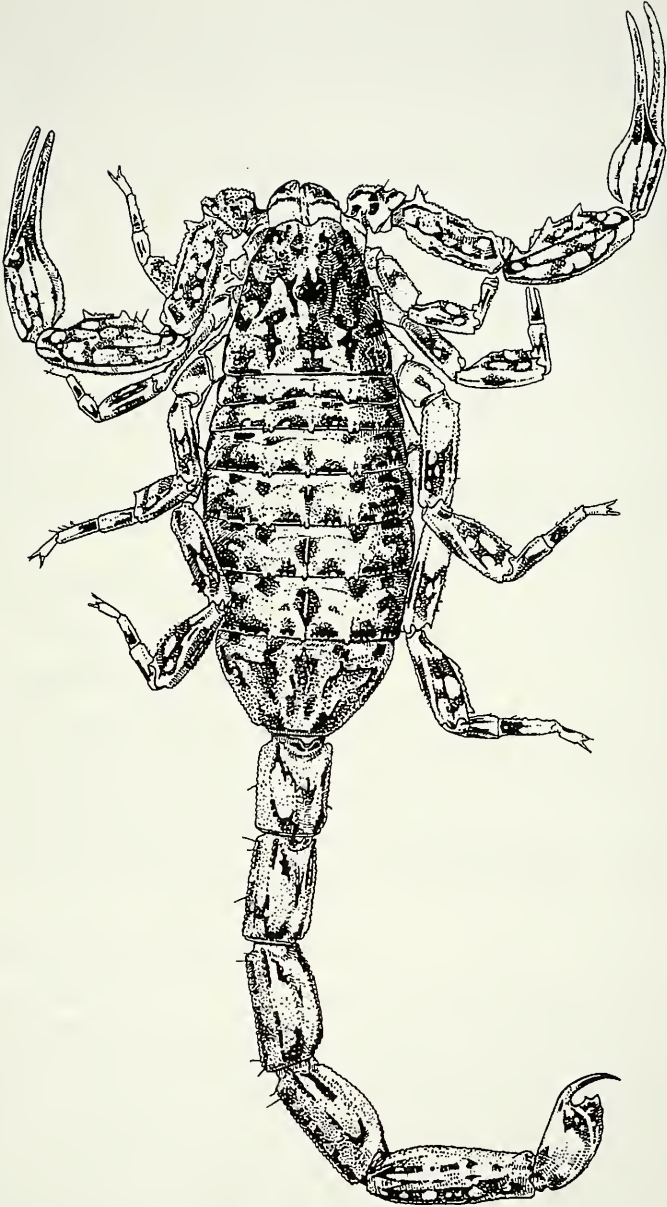


FIG. 10

Microtityus rickyi, female paratype, dorsal view (from Vachon 1977).

Material examined: Trinidad, Chacachacare Island- Lepra House, 5/IV/1997 (lg. R. Martinez), 2 males, 3 females, 1 juv.; Chacachacare Is., south of Lepra House, 5/IV/1997; Lady Chancellor Hill-P.O.S., 16/III/1997, 1 male and 2 females; 18/III/1997, 2 males and 2 females. St. Benedict- Tunapuna, Mt. Tabor trail, 2/IV/1997, 14 males and 13 females, same locality, 4/IV/1997, 2 males and 1 female.

Microtityus starri n. sp.

Figs 11 to 22

Holotype male, allotype female, and 9 male and 16 female paratypes: Trinidad and Tobago, Little Tobago, south west part, 23-27/III/1997.

Holotype, allotype and 7 male and 14 female paratypes, deposited at the Natural History Museum, Geneva. 1 male and 1 female paratypes also deposited at the Muséum national d'Histoire naturelle, Paris and in the Zoologisches Museum of the University of Hamburg.

Etymology: Named in honour of Dr Christopher K. Starr, Dept. of Zoology, University of the West Indies, Trinidad & Tobago.

DIAGNOSIS:

The new species *Microtityus starri* can be distinguished from *Microtityus rickyi*, its closest relative, by: (i) the presence of darker pigmentation generally, (ii) a smaller number of pectinal teeth (see Table I), (iii) three large smooth plates on sternite V. In *M. rickyi* these are small. (iv) trichobothrial pattern orthobothriotaxic with the d_2 present in the femur. In *M. rickyi* this pattern is neobothriotaxic with d_2 absent (Vachon 1977 Lourenço & Eickstedt 1983).

The insular geographical distribution of the new species confirms it as representing an isolated population, since scorpion populations generally present very predictable geographical ranges of distribution (Lourenço, 1996).

DESCRIPTION OF THE HOLOTYPE AND ALLOTYPE (measurements in Table II)

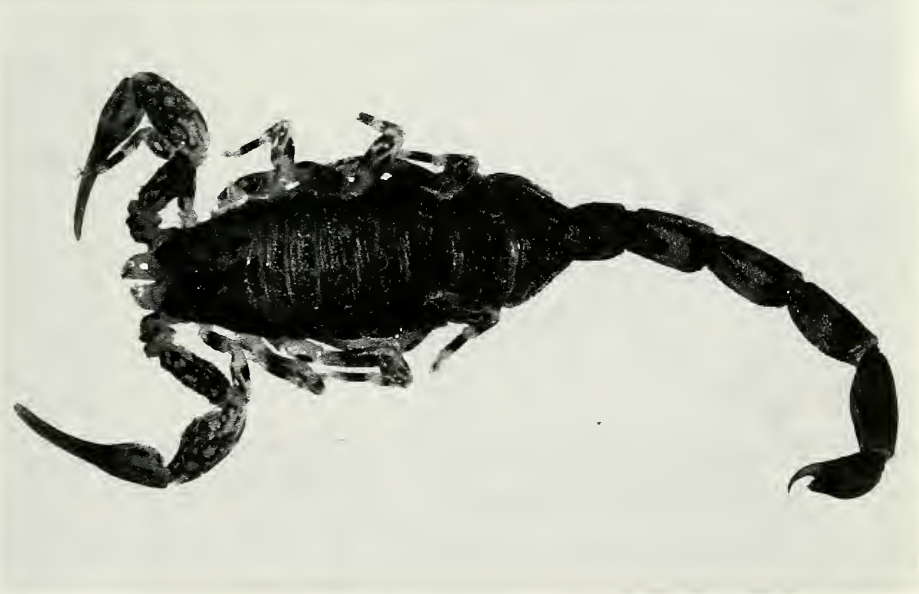
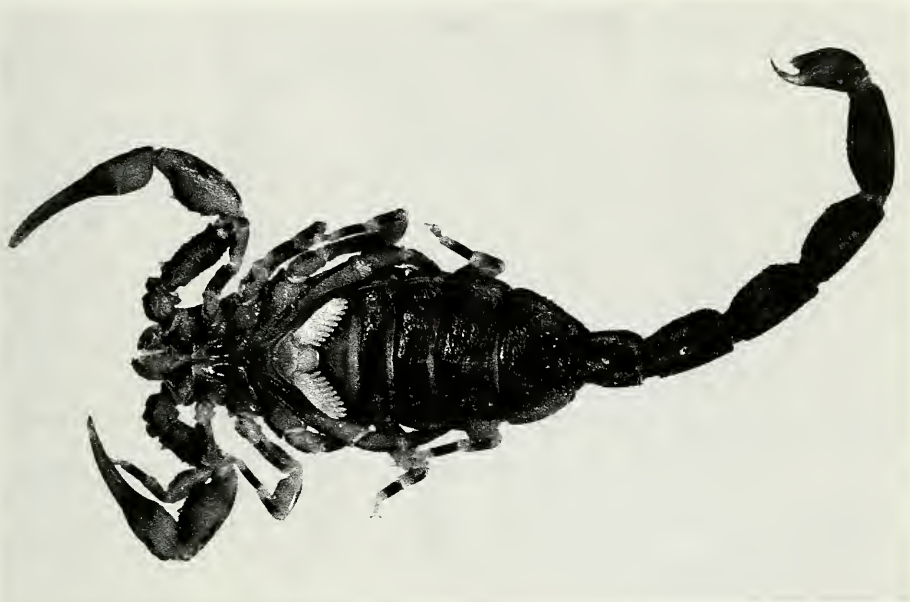
Coloration. Basically yellowish, symmetrically marbled with dark brown producing an overall spotted appearance. Prosoma: carapace yellowish and heavily spotted excepted on the anterior margin; eyes surrounded with black pigment. Mesosoma: yellowish with variegated brown spots over all the tergites and more densely marked on the last two. Metasoma: segments I to III yellowish, with variegated brown spots. Segments IV and V reddish-yellow with brown spots; segment V very dark on posterior end, and ventrally. Vesicle yellowish with dark brown spots on the ventral and lateral faces; base of the aculeus yellowish and its extremity reddish. Venter light yellow with darker spots on coxapophysis and sternites VI and VII. Sternite V with three smooth expanded white zones. Chelicerae yellowish without any variegated brown spots; base of fingers reddish-yellow; fingers yellowish. Pedipalps: yellowish with several spots on the femur and tibia; chelae slightly less densely spotted; fingers reddish-brown. Legs yellowish with dark brown variegated spots.

Morphology. Carapace moderate to strongly granular; anterior margin with a moderate to strong concavity. Anterior median superciliary and posterior median keels moderate to strong. All furrows feeble. Median ocular tubercle distinctly anterior to the centre; median eyes separated by one and a half ocular diameters. Three pairs of lateral



FIGS 11 and 12

Microtityus starri. Male holotype, dorsal and ventral views (photos Cl. Ratton).



FIGS 13 and 14
Female allotype, dorsal and ventral views (photos Cl. Ratton).

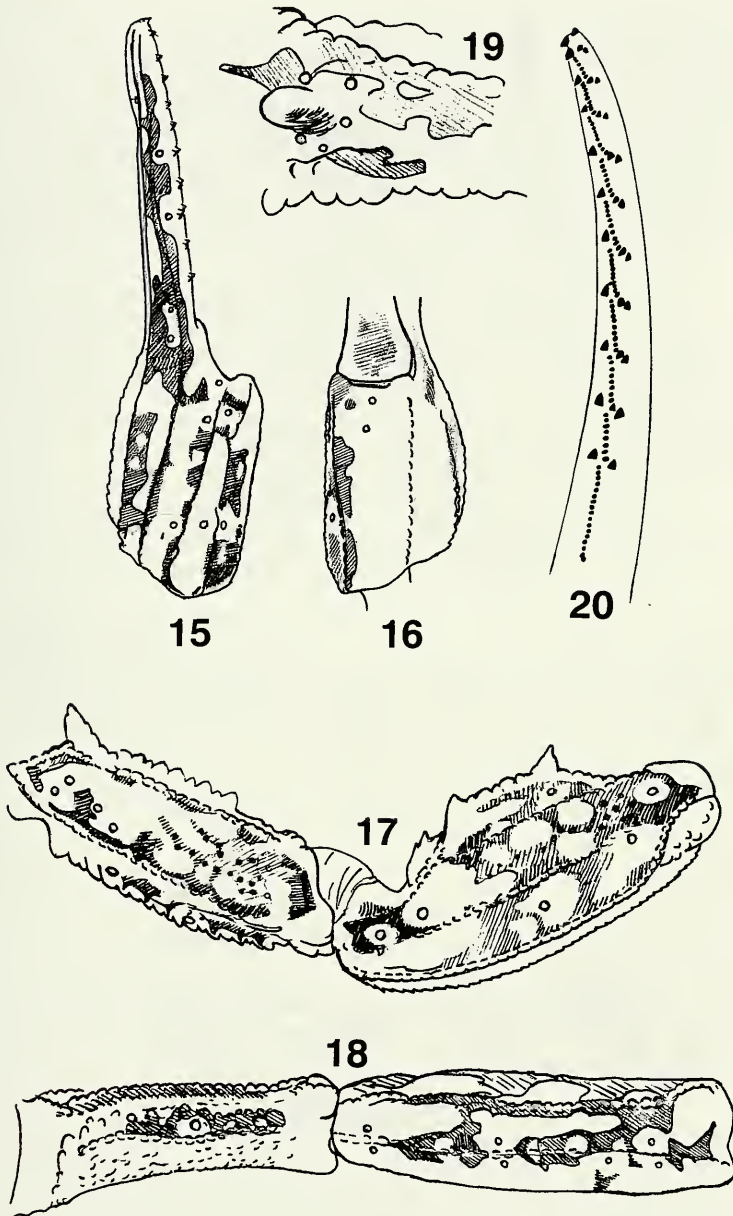
TABLE I
Pectinal tooth variability in *Microtityus rickyi* and *Microtityus starri*.

Trinidad: <i>M. rickyi</i>			Little Tobago: <i>M. starri</i>	
No Teeth	Males	Females	Males	Females
7	0	0	0	7
8	0	12	1	19
9	0	30	13	4
10	19	6	6	0
11	24	0	0	0
12	5	0	0	0

TABLE II
Morphometric values (in mm) of the male holotype and female allotype of *Microtityus starri*

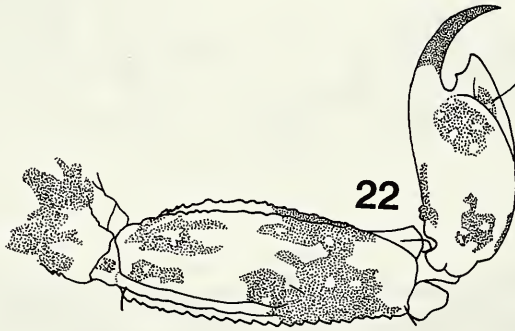
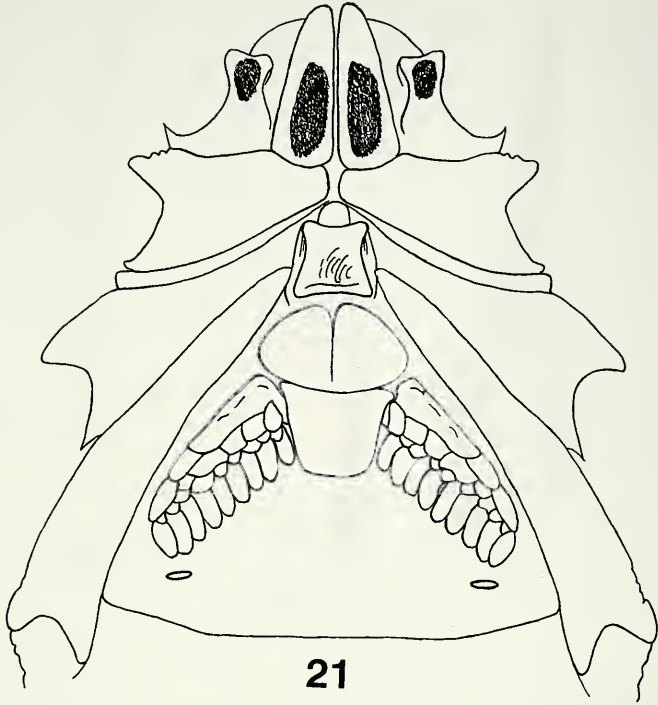
	Male holotype	Female allotype
Carapace:		
– length	1,7	2,4
– anterior	1,2	1,4
– posterior width	2,1	2,8
Metasomal segment I:		
– length	1,1	1,3
– width	0,9	1,2
Metasomal segment V:		
– length	1,8	2,3
– width	0,7	0,9
– depth	0,8	1,0
Vesicle:		
– width	0,7	0,9
– depth	0,6	0,8
Pedipalp:		
– Femur length	1,3	1,7
– Femur width	0,4	0,7
– Tibia length	1,6	2,1
– Tibia width	0,6	0,9
– Chelae length	2,4	3,2
– Chelae width	0,6	0,8
– Chelae depth	0,4	0,8
Movable finger:		
– length	1,5	2,1

eyes. Sternum subquadrangular to quadrangular. Mesosoma: tergites moderate to strongly granular. Median keel and two accessory keels present in all tergites, which are therefore tricarinate. Tergite VII pentacarinate. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 10-10; basal middle lamellae of the pectines not dilated. Sternites I to V almost smooth with very short stigmata. Sternite V with three smooth expanded zones; sternites VI and VII moderately granular with four keels. Metasoma: segments I and II with 10 keels, crenulate; segments III and IV



FIGS 15 to 20

Microtityus starri, female allotype. 15 to 19. Trichobothrial pattern. 15 and 16. Chela, external and ventral aspects. 17 and 18. Tibia and femur, dorsal and external aspects. 19. Femur, detail of internal aspect. 20. Disposition of the granulation of pedipalp-chela finger.



1 mm

with 8 keels. Segment V with 5 keels. Intercarinal spaces moderately granular. Telson with vestigial keels and a short and moderately curved aculeus; subaculear tooth very strong and rhomboid. Cheliceral dentition characteristic of the family Buthidae (Vachon, 1963). Pedipalps: femur pentacarinata; tibia with 7 keels and chelae with 8-9 keels, crenulate; internal face of tibia with 6 strong spinoid granules; all faces moderately granular. Movable fingers with 11/11 oblique rows of granules; no accessory granules present. Trichobothriotaxy; orthobothriotaxy A- α (Vachon 1973, 1975). Legs: tarsus with very numerous median fine setae ventrally.

Tityus discrepans (Karsch, 1879)

Fig. 36

This species, described by Karsch from Caracas, Venezuela, remains poorly known. Some indications of the characters and status of the species are given by POCOCK (1897), MELLO-LEITÃO (1945), KJELLESVIG-WAERING (1966) and more recently by LOURENÇO (1981). *Tityus discrepans* is rapidly recognised among the *Tityus* spp. of Trinidad and Tobago by the presence of a single keel on the ventral surface of metasomal segments II to V.

Material examined: Trinidad, Lady Chancellor Hill-P.O.S., 16/III/1997, 1 male. Mt. St. Benedict- Tunapuna, Mt. Tabor trail, 4/IV/1997, 2 males.

Tityus melanostictus Pocock, 1893b

Fig. 23

This species was described from Trinidad where it seems to be fairly common. *Tityus melanostictus* is also present in the northern part of Venezuela. A full redescription has already been published by LOURENÇO & EICKESTEDT (1987).

Material examined: Trinidad, Lady Chancellor Hill-P.O.S., 16/III/1997, 1 male and 2 females; 18/III/1997, 1 male. Chacachacare Island-south of Lepra House, 5/IV/1997, 13 males and 8 females; 5/IV/1997 (I. R. Martinez), 4 males and 2 females.

Tityus trinitatis Pocock, 1897

Figs 24 to 35

This species was described from Trinidad and is endemic to the islands of Trinidad & Tobago, where it presents some polymorphic variability in its overall size and in several other characters such as pigmentation and the number of teeth in the pectines (see Table III). After its description this species was redescribed in more detail by Mello-Leitão (1945) and Lourenço (1984). *Tityus trinitatis* is, without question, the most common species in Trinidad and Tobago and the only one responsible for serious incidents of scorpion poisoning of humans.

Material examined: Trinidad, Chacachacare Island- south of Lepra House, 5/IV/1997, 2 males and 10 females; 5/IV/1997 (I. R. Martinez), 3 males and 2 females. Lady Chancellor Hill-P.O.S., 16/III/1997, 5 males and 1 female; 18/III/1997, 12 males and 2 females; 6/IV/1997, 1 male and 3 females; 7/IV/1997, 3 males and 1 female. Mt. St. Benedict-Tunapuna, Mt. Tabor Trail, 2/IV/1997, 1 male and 1 juv.; 4/IV/1997, 1 male. Tobago, Speyside- Trail to top of Pigeon Peak, 22/III/1997, 1 male and 2 females). Little Tobago, south-west part, 23/III/1997, 1 male; 27/III/1997, 13 males and 15 females.

FIGS 21 and 22. *Microtityus starri*, female allotype. 21. Ventral aspect of prosoma and mesosoma showing the pectines, genital operculum, sternum and dark spots on coxapophysis. 22. Metasomal segment V and telson, lateral view.

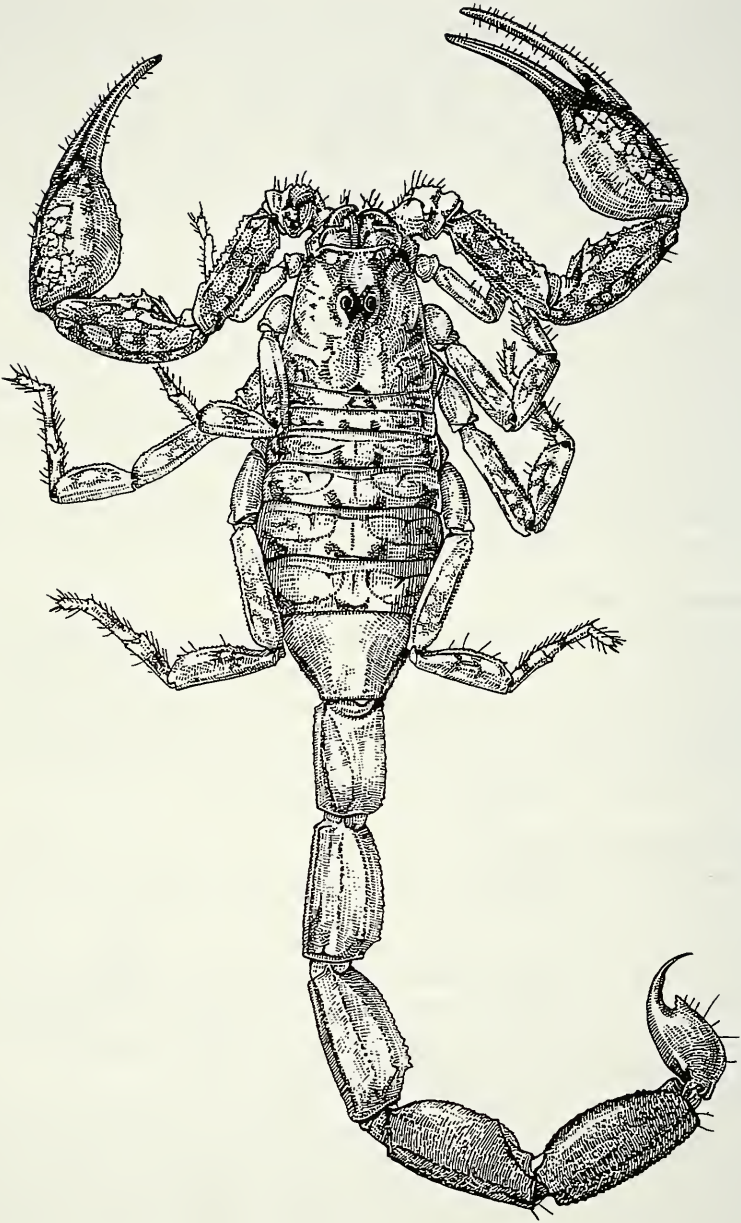
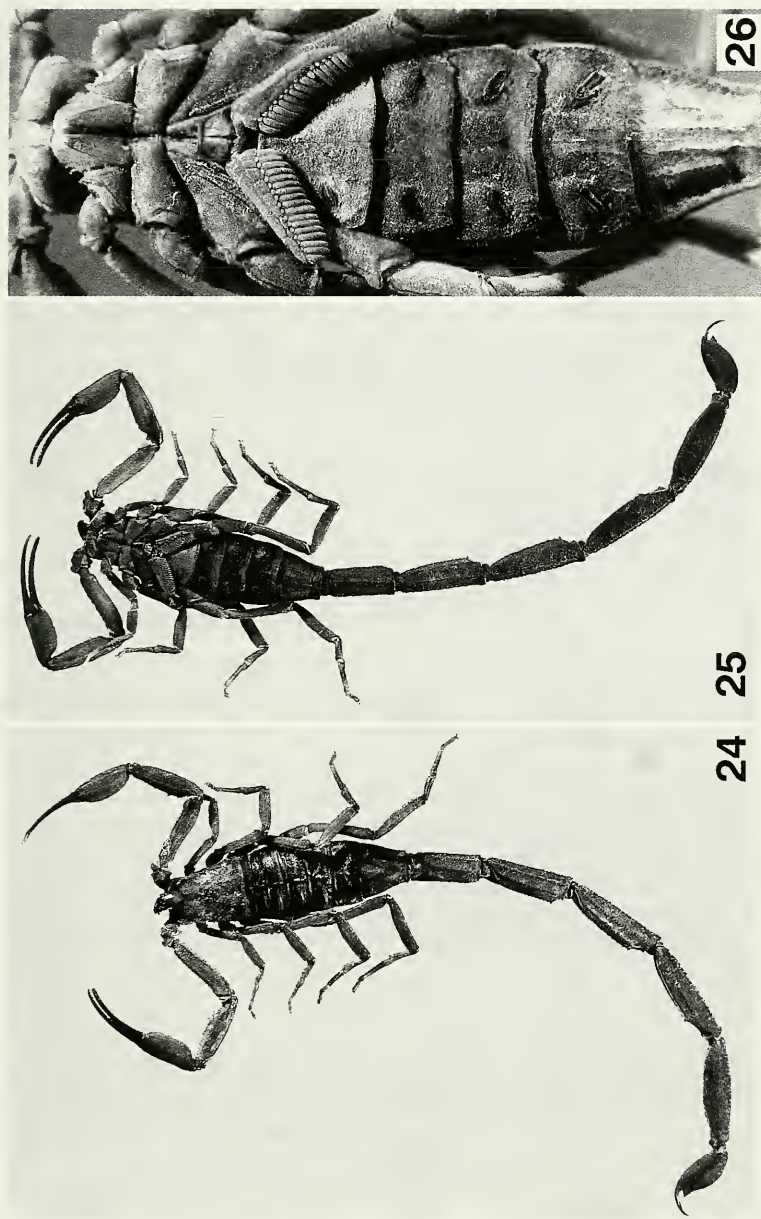
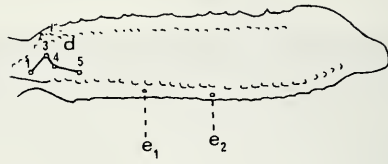
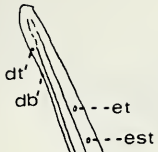


FIG. 23

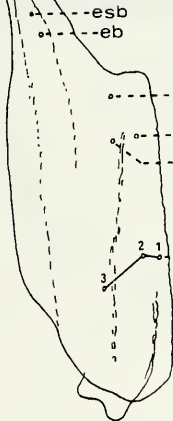
Tityus melanostictus, male, dorsal view (from Lourenço, 1984).



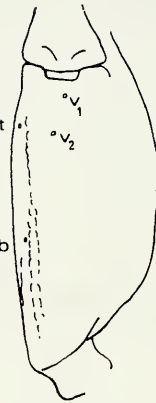
FIGS 24 TO 26. *Tityus trinitatis*, male lectotype. 24 and 25. Dorsal and ventral aspects. 26. Ventral aspect of prosoxa and mesosoma showing coxapophysis, sternum, genital operculum, pectines and sternites.



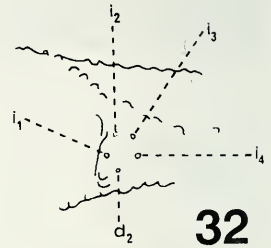
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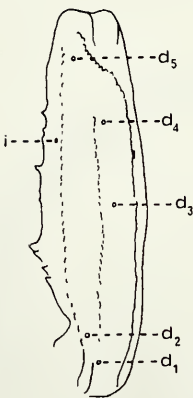
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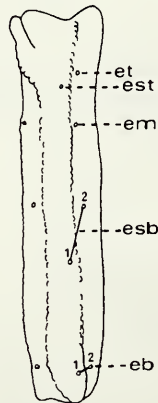
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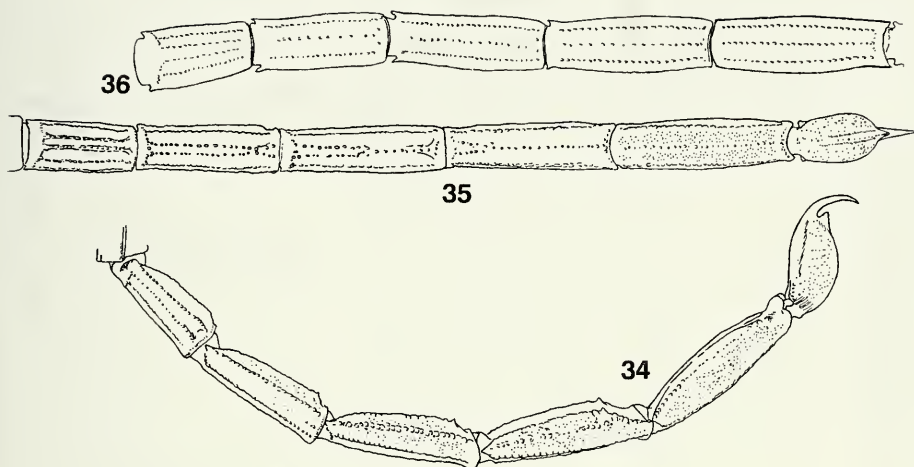
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FIGS 34 and 35. *Tityus trinitatis*, male lectotype. Metasoma and telson, lateral and ventral views. FIG. 36. *Tityus discrepans*, male Metasoma, ventral view.

FAMILY CHACTIDAE

***Broteochactas nitidus* Pocock, 1893a**

This species was described from Trinidad as the type species of the genus *Broteochactas*. Subsequently it was regarded as a synonym of *Broteochactas gollmeri* (Karsch), described from Venezuela. In their contribution to the Chactidae of Trinidad and Tobago, FRANCKE & BOOS (1986) resurrected *B. nitidus* and demonstrated that this species was endemic to Trinidad and Tobago. The chactid species present in the two islands all clearly redescribed and illustrated by FRANCKE & BOOS (1986).

Material examined: Trinidad, Maracas Bay, 16/III/1997, 1 female. Maracas Waterfall 18/III/1997, 1 male and 1 female. Mt. St. Benedict-Tunapuna, Mt. Tabor Trail, 11/III/1997, 3 males and 6 females; 4/IV/1997, 1 male. Tobago, Main Ridge Forest, 26/III/1997, 1 male and 3 females. Speyside-Trail to top of Pigeon Peak, 22/III/1997, 2 females. Speyside- Top of Pigeon Peak, 22/III/1997, 1 male.

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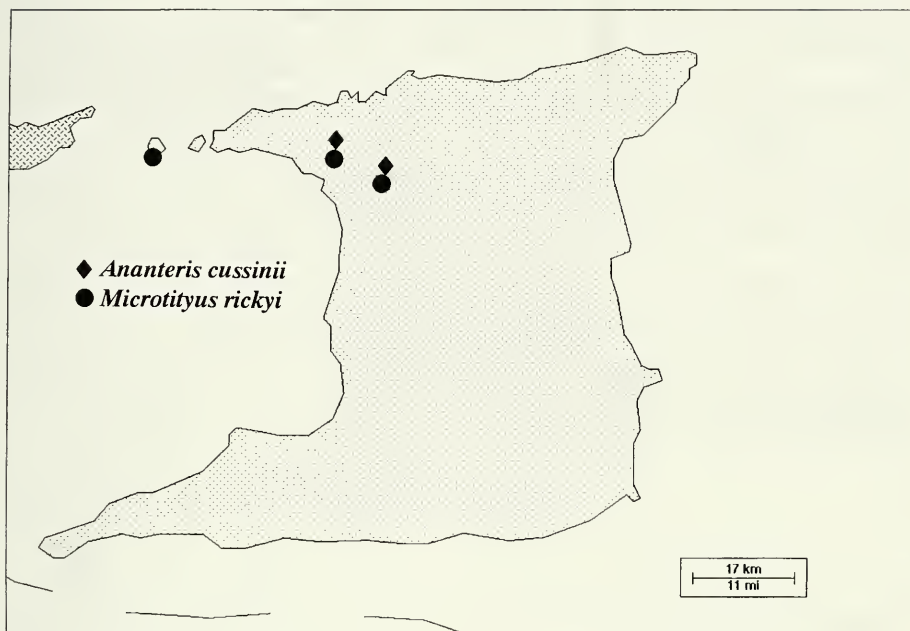
FIGS 27 to 33. *Tityus trinitatis*, male lectotype. 27 to 32. Trichobothrial pattern. 27 and 28. Chela, external and ventral aspects. 29 and 30. Tibia dorsal and external aspects. 31 and 32. Femur, dorsal aspect and detail of internal aspect. 33. Disposition of the granulation of pedipalp-chela finger.

TABLE III. Pectinial tooth variability in 3 species of Trinidad and Tobago

	<i>Tityus melanostictus</i>		<i>Tityus trinitatis</i>		<i>Broteochactas nitidus</i>			
	Male	Female	Male-Tri.	Female-Tri.	Male-Tob.	Female-Tob.	Male	Female
5 & 5							1	0
7 & 5							0	1
7 & 7							1	12
7 & 8							1	0
8 & 8							4	0
15-16	0	2						
16-15	0	1						
16-16	1	2						
17-15	0	1						
16-17	2	1	1	0				
16-18			1	0				
17-16	3	2						
17-17	4	0	0	1	0	1		
17-18	4	1	2	0				
18-17	2	0			0	1		
18-18	3	0	9	3				
18-19			5	0				
19-18	1	1	6	1				
17-19			0	1				
19-19			1	1	1	1		
19-20			1	2	0	2		
20-19			0	2				
20-20			2	1	3	5		
20-21			0	1	3	2		
21-20			2	1	1	2		
20-22					0	1		
21-21			1	1	5	1		
21-22					1	0		
22-20					0	1		
22-21			1	1				
22-22			1	0				
23-22					1	0		

FIG. 37. Localities of collection of *Ananteris cussinii* and *Microtityus rickyi* in Trinidad.

FIG. 38. Localities of collection of *Tityus discrepans*, *Tityus melanostictus* and *Tityus trinitatis* in Trinidad.



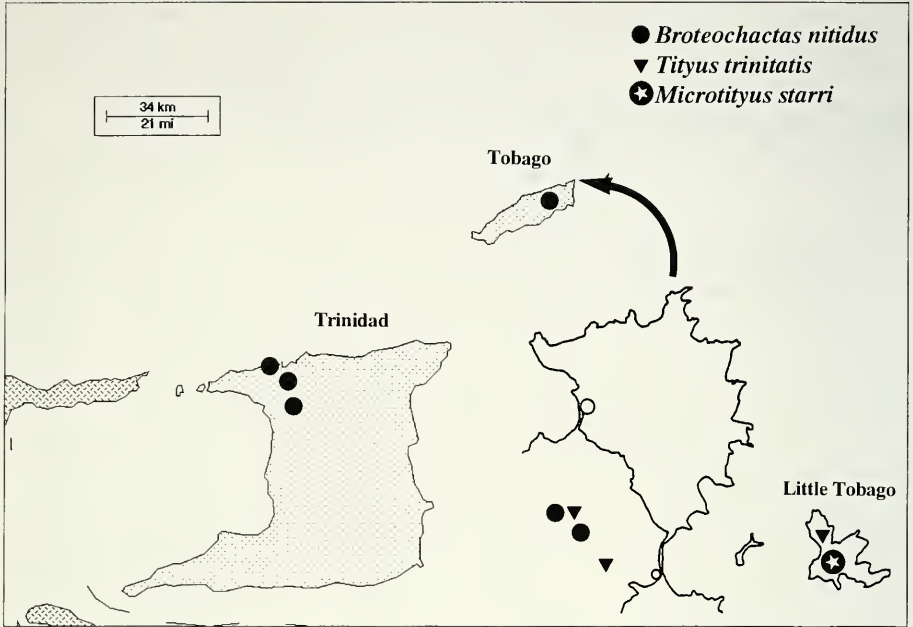


FIG. 39. Localities of collection of *Broteochoactas nitidus* in Trinidad & Tobago and *Tityus trinitatis* and *Microtityus starri* in Tobago and Little Tobago.

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